

**TRANSMITTAL LETTER**  
(General - Patent Pending)

Docket No.  
PM 2000.005/2

In Re Application Of: W. Brett Wilson

Serial No.  
10/627,006

Filing Date  
25 July, 2003

Examiner  
Thomas A. Beach

Group Art Unit  
3671

Title: HYBRID TENSION-LEG RISER

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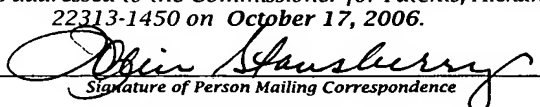
  
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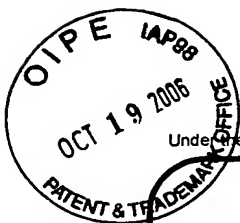
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	Filing Date	July 25, 2003
	First Named Inventor	W. Brett Wilson
	Group Art Unit	3671
	Examiner Name	Thomas A. Beach
Total number of pages in this submission	Attorney Docket Number	PM 2000.005/2

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Serial No. 10/627,006

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

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**IN RE APPLICATION OF W. BRETT WILSON**

**"HYBRID TENSION-LEG RISER"**

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**On Appeal from the decision of the Examiner Mailed April 19, 2006,  
finally rejecting Claims 1 - 13 and the  
Advisory Action Mailed August 3, 2006**

**Examiner Thomas A. Beach    Group Art Unit 3671**

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**APPEAL BRIEF**

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF APPEALS AND INTERFERENCES**

In re application of	§	Confirmation No.: 3714
W. Brett Wilson	§	
	§	
Serial No. 10/627,006	§	Attorney Docket: 2000.005/2
	§	
Filed: July 25, 2003	§	Examiner: Beach, Thomas A.
	§	
Title: "Hybrid Tension-Leg Riser"	§	Art Unit: 3671

MS: Appeal Brief - Patents  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

**APPEAL BRIEF**

Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellants submit the following:

**REAL PARTY IN INTEREST**

The real party in interest is ExxonMobil Upstream Research Company, assignee of the Applicant under assignment recorded July 28, 2003 at Reel 014347, Frame 0112.

**RELATED APPEALS AND INTERFERENCES**

Appellants, Appellants' counsel, and the assignee of the application are not aware of any other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

### **STATUS OF CLAIMS**

Claims 1-19 are pending in the application.

Claims 14-19 have been allowed and claim 10 is indicated to contain allowable subject matter.

Claims 1-13 are being appealed and are set forth in their entirety in the Claims Appendix submitted herewith.

### **STATUS OF AMENDMENTS**

A Response was entered subsequent to the final rejection. The Advisory Action considered the Response but did not allow any of the appealed claims.

### **SUMMARY OF THE CLAIMED SUBJECT MATTER**

In each claim below, the original claims also support the claimed subject matter.

Claim 1 is an independent claim. It is drawn to the use of a combination of flexible pipe jumpers and steel catenary risers in conjunction with a variable buoyancy device. Paragraph [0010].

Claim 2 depends from claim 1. It recites a floating production facility. Paragraph [0024].

Claim 3 depends from claim 1. It requires mid-depth transfer lines to a surface production facility. Paragraph [0030].

Claim 4 depends from claim 1. It requires mid-depth transfer lines to an offloading buoy. Paragraph [0029].

Claim 5 depends from claim 1. It requires the inclusion in the riser tower of

one or more production risers, one or more umbilicals, a carrier pipe structural member, and one or more injection risers. Paragraph [0032].

Claim 6 depends from claim 5. It requires said carrier pipe structural member to have sufficient tensile strength to withstand the full buoyancy force of said variable buoyancy device. Paragraph [0032].

Claim 7 depends from claim 5. It requires said carrier pipe structural member designed to have a sufficient tensile strength to withstand a portion of the full buoyancy of said variable buoyancy device. Paragraph [0032].

Claim 8 depends from claim 1. It requires that the multiple hybrid riser towers are attached to said variable buoyancy device. Paragraph [0028].

Claim 9 depends from claim 1. It requires the variable buoyancy device to have means for varying its buoyancy. Paragraph [0027].

Claim 10 depends from claim 9. It requires the means of claim 9 to be compartmentalization of the buoyancy device such that each compartment can be separately flooded and blown out. Paragraph [0027].

Claim 11 depends from claim 1. It requires the steel catenary risers to extend from the variable buoyancy device to remote production facilities. Paragraph [0026].

Claim 12 depends from claim 1. It requires that hydrocarbon fluids be transported from the sea floor to the floating production vessel. Paragraph [0025].

Claim 13 depends from claim 1. It requires the export of hydrocarbon fluids from the surface production facility through at least one flexible pipe jumper and at least one steel catenary riser. Paragraph [0025].

### **GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

The issues presented for review are:

whether the Examiner erred in rejecting Claims 1-3 and 5-13 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,793,737 to Shotbolt (“Shotbolt”) in view of U.S. Patent No. 6,082,391 to Thiebaud et al. (“Thiebaud”); and

whether the Examiner erred in rejecting Claim 4 as given above for claims 1-3 and 5-13, and further in view of U.S. Patent No. 5,275,510 to de Baan et al. (“de Baan”).

### **ARGUMENT**

#### **The Rejections**

##### **Claims 1-3 and 5-13**

Claims 1-3 and 5-13 were finally rejected as in the previous office action (although claim 10 is indicated to contain allowable subject matter) as unpatentable over Shotbolt in view of Thiebaud, referring to Shotbolt as teaching one or more catenary risers 18 (fig. 2; col. 3, lines 54-60); and to Thiebaud for other claims limitations.

#### **The Error in the Rejection**

The error in the rejection is that while Column 3, line 55 of Shotbolt recites the free-hanging catenary 18 below the support 3 suspended in a catenary curve, it is not a steel catenary riser; rather it is a flexible pipe riser. Shotbolt does not disclose a steel catenary riser and a flexible riser does not meet or suggest the claims.

**The references do not teach or suggest steel catenary risers in use with the other limitations of the claims. The invention improves over the riser arrangements of the prior art.**



#### Claim 4

Claim 4 was finally rejected over Shotbolt in view of Thiebaud and further in view of de Baan for its teaching of a fluid transfer system.

#### The Error in the Rejection

The error in the rejection of claim 4 is that de Baan, like Shotbolt and Thiebaud, lacks the teaching of a *steel* catenary riser and has no teaching to suggest use of different risers according to the invention along with a variable buoyancy device.

#### Why Claims 1-13 are Patentable Under 35 U.S.C. § 103

(i) The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. MPEP §2142. In particular, the initial burden is on the Examiner to find some motivation or suggestion to make the claimed invention in light of the prior art teachings. The suggestion to modify must be “clear and particular.” *In re Sang Su Lee*, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433-1434 (Fed. Cir. 2002); *Winner Int’l Royalty Corp. v. Ching-Rong Wang*, 202 F.3d 1340, 1348-1349, 53 USPQ2d 1580, 1586-1587 (Fed. Cir. 2000).

In the present case, the Examiner has not met the initial burden of identifying a motivation or suggestion within Shotbolt to use a steel catenary riser with the other claimed features of the invention.

Specifically, the Examiner has concluded that Shotbolt discloses the steel catenary riser of the invention. Appellants disagree and invite the Board to review the cited portions that form the basis of the rejection. Nowhere in the abstract or disclosure of any of the cited references is there any teaching of a steel catenary riser for the apparatus claimed.

#### The Distinction of the Claimed Invention

Column 3, line 55 of Shotbolt recites the free-hanging catenary 18 below the support 3. However, while this riser may be suspended in a catenary curve, it is not a

steel catenary riser; rather it is a flexible pipe riser as disclosed by Shotbolt. Shotbolt does not disclose a steel catenary riser and a flexible riser does not meet or suggest the claim. Note that, as given in the present specification at paragraph [0024] at the top of page 6, steel catenary risers require buoyancy support on the order of ten times greater than that required for a typical hybrid riser tower. The present invention recognized this problem and provided a valuable solution.

Shotbolt discloses at col. 3, lines 8-9 that the flexible pipe 10 is lowered from a reel 12. The skilled artisan readily recognizes that flexible riser is different from steel catenary riser. While both may possibly be supplied from a reel, flexible riser is consistent with the flexible pipe jumpers extending from the buoyancy device to a surface production facility in the invention. They are generally composite materials, not steel catenary risers. See the websites for flexible pipe producers at [www.technip.com](http://www.technip.com) (at Subsea Products, see Flexible Pipe) and [www.wellstream.com](http://www.wellstream.com) (see Flexible Pipe, Introduction) for exemplary materials.

#### The Improvement of the Claimed Invention

The invention is directed to the use of a combination of flexible pipe jumpers and steel catenary risers in conjunction with a variable buoyancy device, not flexible pipe strand passing over a support, as given by Shotbolt. The steel catenary risers are better suited for the significant hydrostatic pressure of the deepwater zone while the flexible pipe is better suited for the wave zone. See the disclosure at [0003]. Accordingly, the teaching of Shotbolt is at best inferior to the invention or possibly unusable in deepwater hydrocarbon productions. In any case steel catenary risers are not taught in Shotbolt or Thiebaud.

The Board is also directed to the disclosure at [0024] for the importance of the use of a variable buoyancy device in combination with both SCRs in the deepwater and flexible risers in the wave zone. The buoyancy of the device is varied during assembly of the riser combination, according to the weight suspended.

In view of the above, it would not have been obvious to the skilled artisan to arrive at the invention from the teachings of Shotbolt and Thiebaud. Neither directed

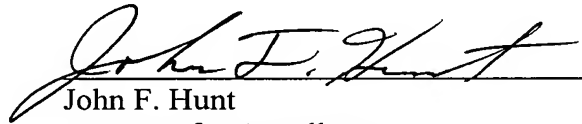
their inventions to the combination of risers in conjunction with a variable buoyancy device above a hybrid riser tower to assemble a production that has hydrostatic pressure-resistant steel catenary riser use in deepwater and flexible pipe use in the wave zone. Since neither reference shows SCRs as required by the claims, allowance of all claims is solicited.

While claim 4 was further rejected over de Baan for its teaching of fluid transfer system, the rejection of this claim is also improper since the SCR is not taught in the primary references or in de Baan.

In the present case, the invention is not only patentable over the prior art, but also an improvement there over for handling of hydrocarbon production, e.g., in both the wave zone and deepwater.

Respectfully submitted,

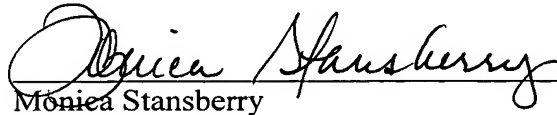
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Monica Stansberry

## **CLAIMS APPENDIX**

The claims involved in the present appeal are as follows:

1. A fluid transfer system for use in offshore hydrocarbon producing operations, comprising:
  - a hybrid riser tower extending upwardly from the sea floor to a location substantially below the wave zone of the body of water;
  - a variable buoyancy device, to which the upper end of said hybrid riser tower is attached, capable of maintaining said hybrid riser tower in a substantially vertical orientation;
  - one or more steel catenary risers extending upwardly from the sea floor and attached at their upper ends to said variable buoyancy device; and
  - one or more flexible pipe jumpers extending from said variable buoyancy device to a surface production facility so as to allow fluid communication between said steel catenary riser terminating at said variable buoyancy device and the surface production facility.
2. The fluid transfer system of claim 1, wherein said surface production facility comprises a floating production facility.
3. The fluid transfer system of claim 1, further comprising mid-depth transfer lines extending from said variable buoyancy device to another surface production facility.
4. The fluid transfer system of claim 1, further comprising mid-depth transfer lines extending from said variable buoyancy device to an offloading buoy.
5. The fluid transfer system of claim 1, wherein said hybrid riser tower includes one or more production risers; one or more umbilicals, a carrier pipe structural member and one or more injection risers.
6. The fluid transfer system of claim 5, wherein said carrier pipe structural

member is designed to have sufficient tensile strength to withstand the full buoyancy force of said variable buoyancy device.

7. The fluid transfer system of claim 5, wherein said carrier pipe structural member is designed to have a sufficient tensile strength to withstand a portion of the full buoyancy force of said variable buoyancy device.

8. The fluid transfer system of claim 1, wherein multiple hybrid riser towers are attached to said variable buoyancy device.

9. The fluid transfer system of claim 1, wherein said variable buoyancy device has means for varying the buoyancy of said variable buoyancy device.

10. The fluid transfer system of claim 9, wherein said means for varying the buoyancy of said device comprises compartmentalization of said device such that each compartment can be separately flooded and blown out.

11. The fluid transfer system of claim 1, wherein said steel catenary risers extend from said variable buoyancy device to remote production and processing facilities.

12. The fluid transfer system of claim 1, wherein hydrocarbon fluids from one or more subsea wells are transported from the sea floor to said floating production vessel through at least one hybrid riser tower and at least one flexible pipe jumper.

13. The fluid transfer system of claim 1, wherein hydrocarbon fluids are exported from said surface production facility through at least one flexible pipe jumper and at least one steel catenary riser.

14. A process for transferring fluids in offshore hydrocarbon producing operations, comprising the steps of:

installation of a hybrid riser tower, including attaching a variable buoyancy device to the upper end of said hybrid riser tower, where the buoyancy of said variable buoyancy device is first reduced so that its net buoyancy does not exceed the design tension limit of the hybrid riser tower;

installation of one or more steel catenary risers extending upwardly from the

sea floor and attached at their upper ends to said variable buoyancy device, where the buoyancy of said variable buoyancy device is increased in order to support said steel catenary risers, while keeping the net buoyancy below the design tension limit of the hybrid riser tower;

attaching the lower ends of a plurality of flexible pipe jumpers to said variable buoyancy device and the upper ends to a surface production facility in such a manner as to allow fluid flow between said risers and said surface production facility.

15. The process of claim 14, further comprising installing mid-depth transfer lines to the variable buoyancy device such as to enable fluid communication to an offloading buoy.

16. The process of claim 14, further comprising installing mid-depth transfer lines to the variable buoyancy device such as to enable fluid communication to an additional surface production facility.

17. The process of claim 14, further comprising installing an additional hybrid riser tower to said variable buoyancy device.

18. The process of claim 14, wherein said variable buoyancy device is compartmentalized such that each compartment can be flooded or blown out independently of the others.

19. The process of claim 14, further comprising installing steel catenary risers from said variable buoyancy device to remote production and processing facilities, such as to enable exportation of fluids to said remote production and processing facilities.

**EVIDENCE APPENDIX**

Pursuant to 37 C.F.R. § 41.37(c)(1)(ix), submitted herewith are copies of any evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132 or any other evidence entered by the Examiner and relied upon by Appellant in the appeal.

NONE; however, the Board is invited to view the two web pages referred to in the Argument above, for supplementary support for distinctions among riser types.

**RELATED PROCEEDINGS APPENDIX**

Submitted herewith are copies of decisions rendered by a court or the Board in any proceeding identified in Section II pursuant to 37 C.F.R. § 41.37(c)(1)(ii).

NONE